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HARVARD UNIVERSITY
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THE HARVARD SCHOOL OF PUBLIC HEALTH

55 SHATTUCK STREET, BOSTON, MASS.

INCLUDING

COURSES OF INSTRUCTION FOR 1936–37

PUBLISHED BY HARVARD UNIVERSITY

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BY THE HARVARD UNIVERSITY PRESS

HARVARD SCHOOL OF PUBLIC HEALTH

ANNOUNCEMENT

OF THE

HARVARD SCHOOL OF PUBLIC HEALTH

55 SHATTUCK STREET, BOSTON, MASS.

OF

HARVARD UNIVERSITY

1936

PUBLISHED BY HARVARD UNIVERSITY

1936

JULY

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1937

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DECEMBER

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CALENDAR

1936

Sept. 25, Friday.	Registration of students.
Sept. 28, Monday.	ACADEMIC YEAR BEGINS. Payment of the first instalment of the tuition fee is required on this date.
Oct. 12, Monday.	Columbus Day: a holiday.
Nov. 11, Wednesday.	Armistice Day: a holiday.
Nov. 26, Thursday.	Thanksgiving Day: a holiday.
Nov. 28, Saturday.	Payment of the second instalment of the tuition fee is required on or before this date.

RECESS FROM DEC. 23, 1936 TO JAN. 2, 1937, INCLUSIVE

1937

Jan. 1, Friday.	Last day for receiving theses for February degrees.
Jan. 30, Saturday.	Payment of the third instalment of the tuition fee is required on or before this date.
Feb. 1, Monday.	SECOND HALF-YEAR BEGINS.
Feb. 22, Monday.	Washington's Birthday: a holiday.

RECESS FROM APRIL 4 TO APRIL 10, INCLUSIVE

April 19, Monday.	Patriots' Day: a holiday.
April 30, Friday.	Payment of the fourth instalment of the tuition fee is required on or before this date.
May 1, Saturday.	Last day for receiving theses for June degrees.
May 31, Monday.	Memorial Day: a holiday.
June 24, Thursday.	COMMENCEMENT.

SUMMER VACATION, FROM COMMENCEMENT TO SEPTEMBER 26, INCLUSIVE

In order to insure equal periods of time for the various courses, the following division of the academic year has been arbitrarily made:

Mon. Sept. 28–Sat. Oct. 24	OCTOBER
Mon. Oct. 26–Sat. Nov. 21	NOVEMBER
Mon. Nov. 23–Tues. Dec. 22	DECEMBER [1]
Mon. Jan. 4–Sat. Jan. 30	JANUARY
Mon. Feb. 1–Sat. Feb. 27	FEBRUARY
Mon. Mar. 1–Sat. Mar. 27	MARCH
Mon. Mar. 29–Sat. May 1	APRIL [2]
Mon. May 3–Sat. May 29	MAY

[1] Christmas vacation from Dec. 23, 1936, to Jan. 2, 1937, inclusive.

[2] Spring recess from April 4 to April 10, 1937, inclusive.

THE PRESIDENT AND FELLOWS OF HARVARD COLLEGE

This Board is commonly known as the CORPORATION.

PRESIDENT

JAMES BRYANT CONANT, A.B., Ph.D., LL.D., S.D., L.H.D.
17 Quincy St., Cambridge

FELLOWS

THOMAS NELSON PERKINS, A.B., LL.B., LL.D.
50 Federal St., Boston

ROGER IRVING LEE, A.B., M.D. 264 Beacon St., Boston

GRENVILLE CLARK, A.B., LL.B. 31 Nassau St., New York, N.Y.

CHARLES ALLERTON COOLIDGE, JR., A.B., LL.B.
50 Federal St., Boston

HENRY JAMES, A.B., LL.B., LL.D.
522 Fifth Ave., New York, N.Y.

TREASURER

HENRY LEE SHATTUCK, A.B., LL.B. 24 Milk St., Boston

SECRETARY TO THE CORPORATION

JEROME DAVIS GREENE, A.B., A.M.
10 University Hall, Cambridge

THE BOARD OF OVERSEERS

The PRESIDENT and the TREASURER of the University, *ex officio*, and the following persons by election: —

1937 *

GEORGE RUSSELL AGASSIZ, A.B., President,
14 Ashburton Pl., Boston

ALLSTON BURR, A.M. 60 State St., Boston

DWIGHT PARKER ROBINSON, A.B., S.B. St. Davids, Pa.

FREDERICK WINSOR, A.B. Middlesex School, Concord, Mass.

WILLIAM PHILLIPS, A.M., LL.D.
Department of State, Washington, D. C.

1938

MINOT SIMONS, A.M., D.D. 64 East 86th St., New York, N. Y.

DANIEL FISKE JONES, A.B., M.D. 195 Beacon St., Boston

ALBERT ARNOLD SPRAGUE, A.B.
1130 Lake Shore Drive, Chicago, Ill.

GEORGE WHITNEY, A.B. 23 Wall St., New York, N. Y.

FRANCIS PARKMAN, Ph.D. St. Mark's School, Southboro

1939

MARK ANTONY DE WOLFE HOWE, A.M., LITT.D.
16 Louisburg Sq., Boston

NATHAN HAYWARD, A.B., S.B.
12 South 12th St., Philadelphia, Pa.

SAMUEL HUNTINGTON WOLCOTT, A.B.
State Street Trust Company, Boston

GASPAR GRISWOLD BACON, A.B., LL.B.
222 Prince St., Jamaica Plain

WALTER LIPPMANN, A.B., LL.D., LITT.D.
230 West 41st St., New York, N. Y.

* The term expires, in each case, on Commencement Day of the year indicated.

1940

CHARLES WARREN, A.M., LL.D.
710 Mills Building, Washington, D. C.

JAMES MADISON MORTON, Jr., A.M., LL.B.
United States Courts, Boston

ALBERT FRANCIS BIGELOW, A.B., LL.B.
211 Congress St., Boston

CHARLES ELLIOTT PERKINS, A.B.
257 La Arcada Building, Santa Barbara, Calif.

SAMUEL CABOT, A.B. 141 Milk St., Boston

1941

GEORGE THOMAS MOORE, S.B., Ph.D.
Missouri Botanical Garden, St. Louis, Mo.

WILLIAM RICHARDS CASTLE, A.B., LL.D., D.C.L.
2200 S St., N.W., Washington, D.C.

LEVERETT SALTONSTALL, A.B., LL.B., LL.D.
608 Shawmut Bank Bldg., Boston

HENRY STURGIS MORGAN, A.B.
2 Wall Street, New York, N.Y.

BLISS PERRY, A.M., L.H.D., Litt.D., LL.D.
5 Clement Circle, Cambridge

SECRETARY OF THE BOARD OF OVERSEERS

WINTHROP HOWLAND WADE, A.M., LL.B.
50 Congress St., Boston

ADMINISTRATIVE OFFICERS

President: James B. Conant, A.B., Ph.D., LL.D., S.D., L.H.D.
Office, 5 University Hall, Cambridge.

Dean: Cecil K. Drinker, S.B., M.D., S.D.
Office, School of Public Health, 55 Shattuck Street, Boston.

Secretary: Marian Dale.
Office, School of Public Health, 55 Shattuck Street, Boston.

ADMINISTRATIVE BOARD

President James B. Conant, A.B., Ph.D., LL.D., S.D., L.H.D. (*ex officio*).

Cecil K. Drinker, S.B., M.D., S.D., *Dean*, and *Professor of Physiology.*

Edwin B. Wilson, A.B., Ph.D., *Professor of Vital Statistics.*

Hans Zinsser, A.M., M.D., S.D., *Professor of Bacteriology.*

Wilson G. Smillie, A.B., M.D., *Professor of Public Health Administration.*

Frederick F. Russell, M.D., S.D., *Professor of Preventive Medicine and Epidemiology.*

THE HARVARD SCHOOL OF PUBLIC HEALTH

HISTORICAL STATEMENT

The Harvard School of Public Health first gave instruction to students in the academic year 1922–23. For many years activity in public health had been rapidly increasing in Harvard University. The influence of the University upon public health, through the pioneering and long-continued efforts of Dr. Henry P. Walcott, for many years senior member of the Harvard Corporation, was important and far-reaching. Courses in the various departments had been gradually developed to meet the need for men trained to conserve public health. The field of public health is so broad that it is not strange that this School did not find its origin in any one department. The records show certain important steps in what has been essentially a gradual development. In 1909 a department of Preventive Medicine and Hygiene was established in the Medical School. The degree of Doctor of Public Health was first conferred in 1911. In this same year a department of Sanitary Engineering was inaugurated in the Engineering School. In 1913 a department of Tropical Medicine was formed. In 1918 a Division of Industrial Hygiene, with clinical and laboratory facilities, was organized in the Harvard Medical School.

Besides these activities which were directly concerned with the training of men for public health work, research was being carried on in the regular departments of the Harvard Medical School in Bacteriology, Pathology, Parasitology, Physiology, Biochemistry, and others, which had a less direct but very real bearing on the development of the science of public health. On analysis it appeared that there were many activities under the various faculties of Harvard University, besides those of Medicine and Engineering, that had some bearing on public health. Under the Faculty of Arts and Sciences there were many courses, such as those in Physics, Chemistry, Zoölogy, Social Ethics, etc., which formed in certain cases important parts of the training of individuals for work in public health. In addition, there had been established in 1914, under the Faculty of Arts and Sciences, a department of Hygiene, which undertook the supervision of the health of the students in its broadest aspect. This department had collected much data of considerable value in public health.

In 1913 the "Harvard-Technology" School of Public Health was organized. It was under the joint management of Harvard University

and the Massachusetts Institute of Technology. This pioneer School continued to operate until the fall of 1922, when it was superseded by the new Harvard School of Public Health. However, the Massachusetts Institute of Technology continues to coöperate with the Harvard School of Public Health and also offers courses in public health through its department of Biology and Public Health.

As a result of these activities, the University found itself in possession of a substantial nucleus upon which to erect a new School of Public Health of larger scope, and in 1921 received from the Rockefeller Foundation a generous endowment for this purpose, known as the Henry P. Walcott Fund of Harvard University. This gift made it possible: first, to correlate and to enlarge the various departments already existing, such as Preventive Medicine and Hygiene, Bacteriology, Sanitary Engineering, Tropical Medicine, Parasitology, and Industrial Hygiene; second, to create a department of Vital Statistics and to develop new special fields of instruction, such as Public Health Administration, Child Hygiene, Mental Hygiene, Communicable Diseases, and Ventilation and Illumination; and lastly, to purchase a building, standing on land adjacent to that occupied by the Medical School, in which to house the administration and the various groups concerned with the work of public health.

GENERAL STATEMENT

Purpose

The practice of public health is founded upon a broad knowledge of Public Health Administration, Epidemiology, Sanitation and Vital Statistics. All other subjects constitute specialities within these four fields. It is the object of the School to provide the scientific groundwork which underlies efficient health administration, together with some personal acquaintance of modern public health procedures of the best type. To this end lectures, field surveys, hospital exercises and laboratory work are offered by members of the Faculty and by special instructors actively engaged in public health work. Students may thus prepare themselves for careers in teaching, administrative, field or laboratory positions, while special opportunity is offered to those who desire to contribute to knowledge through research or field investigations.

Facilities

The School of Public Health is located at 55 Shattuck Street, Boston. The building, formerly occupied by the Infants' Hospital, stands on land adjacent to that occupied by the Medical School and in close proximity

to the Peter Bent Brigham Hospital, the Children's Hospital, the Collis P. Huntington Memorial Hospital, and the Lying-in Hospital. The Antitoxin and Vaccine Laboratory of the Massachusetts Department of Public Health is within a comparatively short distance of the School. The Boston Psychopathic Hospital is also within a few blocks. Thus the School of Public Health, though a definite entity, is an integral part of a great medical center with splendid facilities for development of the teaching of the theory and practice of public health. Certain members of the Faculty of the School are also members of the Faculty of Medicine, and the Library, laboratory facilities and hospitals are utilized by both Schools to great mutual advantage. In Cambridge the graduate departments of the University offer opportunities for work in certain fields of special interest to public health students. For example, students may elect courses in sociology, business administration, the theory of government, common law, sanitary engineering and other subjects.

Various types of well organized public health activities lie within a short distance of the School. These include health departments of cities that are residential in character, small cities with a single large industry, and organized rural health districts. Close affiliation is maintained between the School and the State Department of Public Health, thus assuring students an opportunity not only to observe but actually to participate in state health department activities under competent direction. The Boston City Health Department has a fully developed system of Health Units, giving opportunity to study decentralized health organization and the coöperative activities of voluntary and official health and welfare agencies. The Health Department of the City of Newton has been developed as a special training ground for students of local public health administration in all its phases. A member of the Faculty is Chairman of the Newton Board of Health, and the health officer is on the teaching staff of the School, a mutually advantageous and effective arrangement.

Hospitals and clinics affiliated with the School of Public Health offer facilities for training in child hygiene, tuberculosis control, treatment of contagious diseases of childhood, care of mental defectives, rehabilitation of crippled children, correction of dental defects, and other types of activity which relate directly to the promotion of health and social welfare. Opportunity is also offered for training in hospital administration under competent direction.

Boston being the center of a great industrial metropolitan area students have opportunity to observe at first hand all the public health problems that large industrial populations must face, while the medical and technical personnel of selected industrial establishments offer training in industrial hygiene.

Non-official health organizations such as the Boston Health League, the Community Health Association with its large visiting nurse program, the Nutrition Clinic of the Boston Dispensary, the Judge Baker Foundation for the study of delinquency, the Massachusetts Tuberculosis Association, the School of Public Health Nursing and the School for Social Service of Simmons College, as well as other types of organizations actively engaged in public health or allied activities, offer opportunities to students in the School.

ADMISSION REQUIREMENTS

Candidates for the Master or Doctor of Public Health degrees must satisfy the Committee on Admissions of their academic fitness by a medical degree, or its equivalent, from an approved medical school.

Candidates for the Certificate must present evidence of adequate training in English and other modern languages, physics, inorganic, organic and biochemistry, biology, anatomy, histology, physiology, pathology and bacteriology. These qualifications represent the minimum requirements for entrance to the Harvard Medical School, plus certain of the fundamental medical sciences of the first two years of the Medical School.

Those who do not meet the academic requirements for admission as candidates for degrees or the certificate, may be admitted as students to certain courses and programs of study at the discretion of the Administrative Board.

Opportunities are offered to research students who may desire to investigate special health problems or to make surveys without reference to a degree.

The mere completion of courses is not ordinarily satisfactory evidence of the fitness of a prospective student. The Committee on Admissions may require further evidence of present ability to utilize the training received and ability to profit by the courses administered by the School.

All inquiries and communications should be addressed to the Secretary, Harvard School of Public Health, 55 Shattuck Street, Boston, Mass.

Programs of Study

Students wishing to become candidates for either the Master or Doctor of Public Health degrees should consider the courses Public Health Administration A, Epidemiology A, Vital Statistics A1, Bacteriology A, Ecology A, Parasitology A or Medical Zoölogy and Tropical Medicine A, Sanitation A, and Nutrition A as representing the minimum requirements in these subjects. Permission may be given by the Administrative

Board, however, to omit one or more of these courses if, on conference with the head of the department giving a course, it is felt the student's previous training enables him to meet the requirements.

In addition to the above required courses students may elect courses in Child Hygiene, Communicable Diseases, Industrial Hygiene, and Mental Hygiene. The month of May will be devoted to special work in one of these fields, in one of the required fields, or in such other subjects as Applied Immunology, Hospital Administration, etc.

Students unable to spend a full academic year at the School may come for individual courses if their preparation for the course is approved by the professor in charge. The tabular view (page 39) will give an idea of the possibilities of this plan.

Courses in Other Divisions of the University

Students in the School of Public Health may take courses in other departments of the University subject to the following conditions: (1) Students must be properly qualified; (2) the consent of the professor in charge of the course must be obtained in each case; (3) the approval of the Administrative Board of the School of Public Health must be procured before one of these courses may be included as a part of a program.

CERTIFICATE IN PUBLIC HEALTH

Prerequisites: Candidates for the Certificate must give evidence of having had satisfactory training in modern languages, inorganic, organic and biochemistry, biology, physiology, anatomy, histology, pathology, and bacteriology. As a rule these requirements will be met by students possessing a bachelor's degree plus the first two years in an approved medical school.

The Certificate in Public Health is granted on satisfactory completion of individual courses in an approved program or for distinguished work in a single field, and does not require the final general examination essential for the degree of Master of Public Health.

Residence: One academic year must be spent in residence at this University.

DEGREES

Master of Public Health

Prerequisites: Candidates for this degree must present satisfactory evidence of having received the M.D. degree, or its equivalent, from an approved medical school.

Final examination: This is a written or oral examination based upon the minimum requirements stated under programs of study and upon

such further subjects as may have been contained in the candidate's approved program.

Residence: One academic year must be spent in residence at this University.

Doctor of Public Health

The degree of Doctor of Public Health is not obtained by the mere completion of a group of courses and submission of a thesis reporting routine observations. It is granted on evidence of real scholarship in the fundamental aspects of public health and presentation of a thesis which displays independent ability and originality in a special field. Two years of work at the School are usually necessary to obtain the Doctorate in Public Health. In instances where preparation has been exceptionally thorough a single year may suffice, but no assurance can be given of this since the preparation of an adequate thesis may readily require more time than was anticipated.

Prerequisites: Students entering for this degree must present satisfactory evidence of having received the M.D. degree, or its equivalent, from an approved medical school.

Candidacy for the degree: To qualify as a candidate the student is required to pass with honors an examination, which may be written or oral, based upon the minimum requirements stated under programs of study, together with such other subjects as he may have elected. This examination may be taken without reference to the length of residence as a student. It is intended to provide the assurance that all men receiving the Doctorate in Public Health are grounded in the four fundamental subjects and in the field most closely allied to their special interests. Programs of study or statements of the qualifications of the student for examination must be presented to the Administrative Board when the student enters the School.

Thesis: Upon admission to candidacy the student must present a program of independent investigation to the Administrative Board. The results of this investigation will form the basis of the thesis which must be presented as one of the final requirements for graduation. *Two copies* of the thesis must be received by the Dean's Office on or before the first day of January for degrees conferred in February and on or before the first day of May for degrees conferred in June. Each copy must be accompanied by a summary not exceeding 1200 words in length, which shall indicate clearly the purposes, methods and results of the investigation.

Final Examination: After acceptance of the thesis the candidate will be called before the Faculty for an oral examination upon the thesis and

upon those branches of science which are of especial importance for the field of the thesis.

Residence: At least one academic year must be spent in residence at this University.

Doctor of Philosophy

Properly qualified students may enroll with the Division of Medical Sciences of Harvard University for the degree of Doctor of Philosophy. Women may similarly enroll for this degree through Radcliffe College.

Further information may be secured from the Secretary, Division of Medical Sciences, Harvard Medical School.

FEES AND EXPENSES

The fees are: For instruction (including laboratory charges except breakage, damage, and loss of apparatus), $400 for each year.

Tuition will be charged on term bills in four instalments, as follows:

One-fourth on the term bill issued at registration and payable on or before September 28th, 1936. Students who register late must pay their bills on or before the second business day following registration.

One-fourth on the term bill issued November 12th and payable November 30th.

One-fourth on the term bill issued January 12th, 1937, and payable January 30th.

One-fourth on the term bill issued April 12th and payable April 30th.

The term bills are sent to the student at his University address unless the Bursar is requested in writing to send them elsewhere.

Students desiring to take single courses may do so at the rate of $65 for one full course, payable in advance.

Student Health Service fee, $20 payable in two equal installments on the September and January term bills.

Bills for miscellaneous charges will be rendered at the time the indebtedness is incurred.

All indebtedness to the University must be paid by candidates for degrees at least one day before Commencement.

Students who are candidates for degrees in the middle of the academic year must pay all dues to the University at least one day before the day upon which the degrees are to be voted.

A student who leaves during the year is charged to the end of the tuition period in which he leaves, provided before that time he gives the Dean notice in writing of his withdrawal; otherwise he is charged to the end of the academic year or to the end of the tuition period in which such notice is given.

When a student's connection with the University is severed, all charges against him must be paid at once.

Any student whose indebtedness to the University remains unpaid on the date fixed for payment is deprived of the privileges of the University until he is reinstated. Reinstatement is obtained only by consent of the Dean of the Department in which the student is enrolled, after paymenf of all indebtedness and a reinstatement fee of $10.

Students owning microscopes are advised to bring them with them. The School has a limited number of microscopes which may be rented upon application to the Administration Office, but offers no guarantee that it will keep on hand a sufficient number of such instruments to furnish one for each student.

BONDS

Every student in the School of Public Health must file with the Bursar a bond in the sum of five hundred dollars as security for payment of University bills. The bond may be signed by two bondsmen, both of whom must be citizens of the United States, or by a surety company duly qualified to do business in Massachusetts. No officer or student of the University will be accepted as a bondsman and in no case will more than one parent be accepted. In lieu of the bond a student may deposit with the Bursar five hundred dollars in United States government bonds, or five hundred dollars in cash, which will bear no interest. Blank forms of bonds may be obtained at the Dean's Office or from the Bursar. *Students will be held responsible for the payment of fees until they have notified the Dean, in writing, of their intentions to withdraw from the School.*

STUDENT HEALTH SERVICE

Each full-time student will be charged annually a Student Health Service fee of $20, payable in two equal installments on the September and January term bills. Part-time students working at the rate of substantially half-time or less may be exempted from this requirement upon recommendation of the Dean.

In return for payment of this fee the School provides a physician to students who will give medical advice and treatment without charge during the school year. The fee also covers a total of two weeks ward care in one of the teaching hospitals of the Medical School if necessary or, in case of minor illness, to bed, board, and ordinary nursing care in the Stillman Infirmary for a period not exceeding two weeks in any one academic year. Medical attendance, private rooms, and special nursing care will be an extra charge. In addition, each student is entitled

to all the medical and other services that have been organized under the Student Health Service plan of the University.

Any illness necessitating absence from work must be reported to the Dean's Office either by the attending physician or by the student if he has not been to a doctor.

Under the auspices of the Department of Medicine of the Harvard Medical School each student will be required to undergo a physical examination shortly after admission to the School. Evidence of having been satisfactorily vaccinated is required for entrance to Harvard University. For information regarding the Stillman Infirmary see the University Catalogue.

FELLOWSHIPS

The School offers a limited number of fellowships to students of high scholarship and exceptional ability who plan to spend not less than one academic year at the School.

Applications for fellowships should be filed with the Secretary of the School.

LIBRARIES

The Library of the School of Public Health is combined with that of the Harvard Medical School on the second floor of the Administration Building of the Medical School. It is open in term time from 9 A.M. until 10 P.M. on week days, from 9 A.M. until 5 P.M. on Saturdays, and from 2 P.M. until 6 P.M. on Sundays. During the summer vacation it is open week days from 9 A.M. until 10 P.M. and on Saturdays from 9 A.M. until 12 M., but is closed on Sundays throughout the day. There are at present 62,000 volumes, 176,919 pamphlets, and 495 current periodicals on file in this library.

Students also have the privilege of using the College Library in Cambridge, as well as the various departmental libraries belonging to the University, in all of which there are 3,602,049 volumes and pamphlets.

The Boston Public Library is open to students who are residents of Boston, and students not residents of Boston who have filed a bond at the Bursar's Office.

The Boston Medical Library, No. 8 The Fenway, contains about 163,283 bound volumes, 109, 816 pamphlets, and 879 current periodicals on file. For those who desire to consult medical literature, this very valuable library is open on week days from 9.30 A.M. to 6 P.M., and on Mondays, Wednesdays, and Fridays until 10 P.M.

HARVARD INFANTILE PARALYSIS COMMISSION

ROGER PIERCE, *Chairman*, RICHARD C. CURTIS, *Treasurer*, W. LLOYD AYCOCK, M.D., FREDERICK AYER, HERMANN F. CLARKE, HOMER GAGE, M.D., ARTHUR T. LEGG, M.D., JAMES J. MINOT, M.D., ROBERT B. OSGOOD, M.D., REDFIELD PROCTOR, RICHARD M. SMITH, M.D., CHARLES H. TAYLOR, HANS ZINSSER, M.D., HENRY D. CHADWICK, M.D.

A Commission for the study of infantile paralysis was appointed by the Corporation of Harvard University on September 25, 1916.

Since that time the Commission has maintained clinics for the treatment of the paralytic effects of this disease and for early diagnosis and treatment of its acute stage. In this work the Commission coöperates with the Massachusetts State Department of Health and the Vermont Department of Health. In addition it is conducting a comprehensive study of the cause, mode of spread and prevention of infantile paralysis. This work is carried on at the bedside, in the field and in the laboratory.

The work of the Commission is financed by public subscription.

ANNOUNCEMENT OF COURSES

BACTERIOLOGY

HANS ZINSSER, A.M., M.D., S.D., *Charles Wilder Professor of Bacteriology and Immunology.*

J. HOWARD MUELLER, Ph.D., *Silas Arnold Houghton Associate Professor of Bacteriology and Immunology.*

FRANCIS B. GRINNELL, A.B., M.D., *Assistant Professor of Bacteriology and Immunology.*

JOHN F. ENDERS, Ph.D., *Assistant Professor of Bacteriology and Immunology.*

LEROY D. FOTHERGILL, A.B., M.D., *Associate in Bacteriology and Immunology.*

WILLIAM A. HINTON, S.B., M.D., *Instructor in Bacteriology* and *Assistant Director of Wassermann Laboratory.*

BENJAMIN W. CAREY, JR., S.B., M.D., *Instructor in Bacteriology and Immunology.*

MORRIS F. SHAFFER, Ph.D., *Assistant in Bacteriology and Immunology.*

The Department of Bacteriology and Immunology of the Harvard School of Public Health, in addition to a fundamental course in bacteriology, offers a course of lectures and demonstrations in immunity and specific therapy.

Opportunity for diagnostic serological work is offered in the Department in connection with the Wassermann Laboratory of the State of Massachusetts, and provision is made for individual work upon problems of serum production, standardization, etc., under Dr. Elliott Robinson of the Massachusetts Antitoxin and Vaccine Laboratory.

Advanced work and opportunities for investigation are available, admission to this type of work depending upon the fitness of the applicant.

Bacteriology A

Lectures and laboratory work. *Mondays, Wednesdays, and Fridays, 2–5 P.M., first half-year.* Dr. Fothergill and associates.

This course deals with the bacteriology of the pathogenic microörganisms in its applications to diagnosis, investigation and prevention of communicable disease. While Public Health students follow the general plan of the medical course, they are segregated under the guidance of Dr. Fothergill and are given a training more adapted to the needs of public health bacteriologists.

The bacteriology of milk, water, sewage and shell fish will be given special consideration. Throughout the course, special lectures will be given and periodic conferences will be held in order that emphasis can be given to certain phases of the subject and to give students an opportunity for the discussion of difficulties. Clinics will be held at the Children's Hospital at which patients having infections with the organisms being studied at the moment will be demonstrated.

No students will be excused from this course, regardless of previous training, without first interviewing the Department regarding their qualifications. If possible it is desirable that such interviews be held before the opening day of the academic year.

Bacteriology 32

Lectures. *Tuesdays, November through January, 2–3 P.M., and Thursdays, November and December, 2.30–3.30 P.M.* Dr. Zinsser.

Immunity. — This course is a series of lectures on the principles and theories of immunity, together with a number of practical demonstrations. It should prepare students for their later work at the Antitoxin Laboratory under Dr. Robinson. The latter half of this course is devoted to lectures on the special immunology of specific diseases. Special

emphasis is given to the specific prophylaxis and treatment of such diseases.

Applied Immunology 33a

Lectures and laboratory work. *Mondays, Wednesdays, and Fridays, 2–5 P.M., at State Antitoxin Laboratory, during May.* Dr. Robinson. For details see page 21.

Bacteriology 31

Arrangements as to hours will be made to suit the needs of individual students. Dr. Hinton.

Diagnostic Serum Reactions. — A short course which deals chiefly with the details of methods of serological syphilis diagnosis, but includes other phases of practical diagnostic public health laboratory work and the organization of laboratories for such purposes.

Since the above series of courses constitutes a complete unit of bacteriological public health laboratory work, it is proposed for students who take the entire group of courses to treat them as a single course in regard to examination.

This curriculum of bacteriological courses taken in conjunction with epidemiology, vital statistics, sanitation and medical zoölogy, represents a thorough training in that branch of public health which deals with the communicable diseases.

Research in Bacteriology

Special advanced courses will be offered in Immunology and the Technique of Serum Study, and will be open to a limited number of students.

Opportunity will be given for properly qualified students to pursue research work along varied lines.

APPLIED IMMUNOLOGY — SERUMS AND VACCINES

Elliott S. A. Robinson, M.D., Ph.D., *Assistant Professor of Applied Immunology* and *Director of the Biologic Laboratories, State Department of Public Health.*

Roy F. Feemster, A.B., M.D., Dr. P.H., *Instructor in Applied Immunology* and *Assistant Director of the Biologic Laboratories, State Department of Public Health.*

Leo Rane, Ph.D., *Assistant in Applied Immunology.*

La Verne A. Barnes, Ph.D., *Assistant in Preventive Medicine and Hygiene.*

Applied Immunology 33a

Lectures and laboratory work. *Mondays, Wednesdays, and Fridays, 2–5 P.M., at State Antitoxin Laboratory, during May.* Dr. Robinson.

In this course the application of immunological theory to the prevention and treatment of disease, as evidenced in the manufacture of serums, vaccines, and related products, is developed by lectures, discussions, and laboratory demonstrations. The content of the course is dependent upon the training and interests of the students.

Facilities are also offered for study of and training in the manufacture of biologic products or for original work in problems related to these processes, at times to be arranged individually.

COMPARATIVE PATHOLOGY

Ernest E. Tyzzer, Ph.B., A.M., M.D., S.D., *Professor of Comparative Pathology.*

Marshall Hertig, Ph.D., *Assistant Professor of Medical Entomology.*

Donald L. Augustine, S.D., *Assistant Professor of Helminthology.*

Quentin M. Geiman, Ph.D., *Assistant in Comparative Pathology.*

Parasitology A

Lectures and laboratory work. *Tuesdays and Thursdays, 2–5 P.M., February and March.* Dr. Tyzzer and associates.

The course consists of lectures, laboratory exercises and demonstrations dealing with helminths, protozoa and arthropods of importance to public health, with the object of training the student in the identification of the more important parasites, and study of their life histories with reference to prevention and control. The agency of insects and other arthropods in the transmission of disease will receive special consideration.

Students with special backgrounds and interests are encouraged to undertake special or advanced work along with, or in lieu of, the regular course. Investigations of members of the Department have provided material, including cultures and other living material, in a number of fields. Among the subjects available for special work are: trichinosis, with special reference to skin and precipitin tests; hookworms; ascariasis; amebiasis, methods of diagnosis and cultivation; trypanosomiasis; leishmaniasis; rearing and dissection of various insects such as mosquitoes, bedbugs, fleas, Phlebotomus sandflies, et cetera; identification of Anopheline mosquitoes; insect rickettsiae.

Advanced Work in Medical Zoölogy

Advanced courses and research in Protozoölogy, Helminthology, and Medical Entomology may be arranged for qualified students.

COMMUNICABLE DISEASES

Charles F. McKhann, S.B., A.M., M.D., *Assistant Professor of Pediatrics and Communicable Diseases.*

R. Cannon Eley, M.D., *Associate in Pediatrics and Communicable Diseases.*

Conrad Wesselhoeft, M.D., *Associate in Communicable Diseases.*

Edward C. Smith, A.B., M.D., *Instructor in Communicable Diseases.*

Charles F. Walcott, A.B., M.D., *Assistant in Communicable Diseases.*

Teaching in Communicable Diseases is given in the Haynes Memorial Hospital for Contagious Diseases and in the Isolation wards of the Children's Hospital.

Communicable Diseases A

Tuesdays and Thursdays, 10–11 A.M., and Fridays, 3–5 P.M., February and March. Dr. McKhann and associates.

Bacteriology A is a prerequisite for this course, which consists of lectures, demonstrations, clinics, and conferences on the care and management of patients with communicable diseases, with special consideration of problems which are solved jointly by the public health official and the practicing physician.

Communicable Diseases B

Tuesdays, Thursdays, and Saturdays, 9–11 A.M., during May. Limited to six students. Dr. McKhann and associates.

This course consists of conferences, clinics and service as observer in the Haynes Memorial Hospital and the Isolation Division of the Out-Patient Department and on the Isolation Wards of the Children's Hospital. It is intended to familiarize the public health student with the diagnostic and therapeutic problems encountered in the care of the individual patient and the determination of the proper and practical disposition of patients suffering from communicable diseases.

Research in Communicable Diseases

Opportunity is offered to qualified students to pursue research work in communicable disease problems in the Department of Communicable Diseases or in conjunction with the Department of Bacteriology and Immunology.

TROPICAL MEDICINE

Richard P. Strong, Ph.B., M.D., S.D., *Professor of Tropical Medicine.*

Andrew Watson Sellards, A.M., M.D., *Associate Professor of Tropical Medicine.*

George C. Shattuck, M.D., A.M., *Assistant Professor of Tropical Medicine.*

Joseph Bequaert, Ph.D., *Assistant Professor of Entomology.*

Jack H. Sandground, S.D., *Assistant Professor of Tropical Helminthology.*

Alexander Hamilton Rice, M.D., A.M., *Professor of Geographical Exploration and Lecturer on Diseases of South America.*

Roland C. Connor, M.D., *Lecturer on Tropical Medicine.*

Afranio do Amaral, Sc. and Litt.B., M.D., Dr.P.H., *Lecturer on Ophiology.*

Albert A. Hornor, A.B., M.D., *Assistant in Tropical Medicine.*

Maurice B. Strauss, A.B., M.D., *Assistant in Tropical Medicine.*

Medical Zoölogy and Tropical Medicine A

Lectures and laboratory work. *Mondays, Wednesdays, and Fridays, 2–5 P.M., February, March, and April.*

Instruction in this course will be furnished by the staff of the Department of Tropical Medicine. Clinical, epidemiological, and pathological aspects of the subjects under consideration will be presented at appropriate times in connection with the laboratory studies.

1 — Infectious and Vitamin Deficiency Diseases

February 1–26. Dr. Strong, Dr. Sellards, and Dr. Shattuck.

The course during this month consists of lectures, laboratory work, and clinical instruction.

The most important infectious and other preventable diseases of tropical and foreign countries will be dealt with from the following points of view:

1. The etiology, principles, and modern methods of diagnosis.
2. The methods of transmission and mode of spread.
3. The hygienic problems involved in their control and prevention.
4. The administrative and practical measures to be employed in the control of these diseases under endemic and epidemic conditions.

2 — Protozoölogy

March 1–19. Dr. ——.

The protozoa that occur in man. These organisms will be studied both from the medical and biological standpoint. Special emphasis will be placed on the morphology of the non-pathogenic as well as the pathogenic species, since the disease producing protozoa can only be distinguished from those that are harmless by careful morphological studies of both groups. Living and stained organisms will be used. Life-cycles and methods of transmission will be considered. Any student who wishes to undertake additional work will be given an opportunity to do so provided his previous training qualifies him for the work he wishes to carry out and if adequate departmental facilities are available.

3 — Helminthology

March 22–April 16. Dr. Sandground.

During this period the course is designed to give the student a general knowledge of the biology of the helminths, and to acquaint him with those species parasitic in man and the diseases caused by them. Emphasis will be placed upon the symptomatology, methods of diagnosis and treatment, and the life cycles in relation to the transmission, prophylaxis and control of these parasites. To meet the special interests of students conferences may be arranged for the discussion of various phases of the subject, and for the review of current literature.

4 — Medical Entomology

April 19–30. Dr. Bequaert.

This course presupposes an elementary knowledge of insects. It will include a survey of the more important arthropods concerned in the health of man, both in temperate and tropical regions. Emphasis is placed upon those arthropods which act as disease transmitters, with a study of life histories, habits, and methods of control. Opportunities are offered for becoming acquainted with methods of collecting, identifying, dissecting and preparing material, and the rearing of insects in experimental studies. A study will be made of the various ways in which these organisms are active either as parasites, as carriers of diseases, or as the cause of local injuries or physiological disturbances. Laboratory work will provide practical training in identification, dissection, methods of studying life histories and habits, and experimental transmission of diseases. Stress will be laid upon furnishing the student with the most

useful monographs and reference books. Students may go on further to become acquainted with the extensive special literature so as to be able to carry on independent research work in tropical and foreign countries.

Advanced Work in Tropical and Exotic Diseases

For students entering the School with the intention of specializing in public health in tropical countries, a series of courses lasting eight months is provided by members of the staff of the Department. The program followed must include advanced courses in exotic and tropical diseases in:

1. Practical bacteriology and pathology.
2. Practical protozoölogy and helminthology.
3. Practical entomology.
4. Epidemiology (including field work).
5. Clinical, at infectious diseases hospital.

The courses in bacteriology, protozoölogy, helminthology, and entomology are fundamental in connection with the prevention and control of tropical or exotic diseases. Courses relating to tropical climatology, botany, venomous animals and the biological effects of sunlight in tropical countries will also be of advantage and of particular interest to the health officer who desires a more cosmopolitan experience, and such are provided for those students desiring them. The need for thoroughly trained men in the field of exotic and tropical medicine is especially urgent.

The program for such advanced students will naturally vary in individual cases and must be approved by the Professor of Tropical Medicine before submission to the Administrative Board.

Special Clinical Work: There are opportunities from time to time for one or more students to attend clinical work for longer or shorter periods at the Boston City Hospital, where there is a service for tropical and foreign diseases under Dr. George C. Shattuck of the Department. There are also opportunities for special clinical work in several hospitals or in the different laboratories situated in the tropics with which Harvard University is connected.

Research in Tropical and Foreign Medicine

The research work in progress includes studies on the etiology and prevention of yellow fever; cytology of hypermastigotes; rôle of the centriole in mitosis; causes of encystation, cellulose digestion in protozoa; studies on onchocerciasis and its prevention in Guatemala and in the

Belgian Congo; entomological studies of the parasitic and blood-sucking insects of Guatemala and of the Belgian Congo in relation to onchocerciasis, and of the known and possible vectors of yellow fever; taxonomic studies on ticks, Hippoboscidae and Tabanidae; morphological studies on various filariid genera affecting man and other animals; general taxonomy of helminths; studies on the longevity of helminths; tests of newer drugs in the therapeusis of taeniaisis; medical surveys and the etiology of certain affections in Guatemala.

PREVENTIVE MEDICINE AND EPIDEMIOLOGY

Frederick F. Russell, M.D., S.D., *Professor of Preventive Medicine and Epidemiology.*

W. Lloyd Aycock, M.D., *Assistant Professor of Preventive Medicine and Hygiene.*

Edward G. Huber, A.B., M.D., Dr.P.H., *Instructor in Preventive Medicine and Hygiene.*

Joseph W. Schereschewsky, A.B., M.D., *Associate in Preventive Medicine and Hygiene.*

Epidemiology A

Lectures. *Tuesdays, Thursdays, and Saturdays, 9–10 A.M., February and March, 9–11 A.M., during April.* Dr. Russell and associates.

The course is designed to give the principles, historic development, and methods of epidemiology, with their application to public health administration of the communicable diseases.

Epidemiology B

Properly qualified students desiring to carry on advanced work and field work may do so under special arrangements with Dr. Russell.

PUBLIC HEALTH ADMINISTRATION

Wilson G. Smillie, A.B., M.D., Dr.P.H., *Professor of Public Health Administration.*

Henry D. Chadwick, M.D., *Lecturer on Public Health Administration* and *Commissioner, Department of Public Health of Massachusetts.*

Harold D. Chope, A.B., M.D., M.P.H., *Instructor in Public Health Administration.*

Gaylord W. Anderson, A.B., M.D., *Assistant in Public Health Administration* and *Deputy Commissioner, Department of Public Health of Massachusetts.*

Public Health Administration A

Lectures and Colloquiums. *Mondays, 10.15–11.15 A.M., Tuesdays, 11.30 A.M.–12.30 P.M., Wednesdays, 10.15 A.M.–12.30 P.M., first half-year.* Dr. Smillie and associates.

Field work — All day Thursday October and January, Thursday mornings November and December.

Lectures: The theory of public health administration is developed by a study of the administrative methods actually employed in various governmental units, including municipalities, counties, states, and the federal government, with comparative studies of public health administration in various foreign countries. The lectures are given by Dr. Smillie and by the State Health Commissioner of Massachusetts and his staff. Certain phases of public health administration are covered by special lecturers who are invited from time to time to cover those particular fields upon which they can speak with authority. During the year 1935–36 special lectures were given by:

Douglass V. Brown, Ph.D., *Assistant Professor of Medical Economics, Harvard Medical School.*

Dr. W. Irving Clark, *Medical Director, Norton Grinding Company, Worcester, Mass.*

Dr. Herbert L. Lombard, *Director, Division of Adult Hygiene, Massachusetts State Health Department.*

Dr. N. A. Nelson, *Director, Venereal Disease Control, Massachusetts State Health Department.*

Miss Sophie C. Nelson, *Director, Visiting Nurse Service, John Hancock Mutual Life Insurance Company, Boston.*

Dr. Thomas Parran, Jr., *Surgeon General, U.S. Public Health Service.*

The notes on the lectures are supplemented by pamphlets, reprints, forms, and references to specific phases of the work, and the current literature is abstracted, so that at the end of the course each student has a nucleus for a public health reference library which can be enlarged from year to year.

Conferences: The last hour each Wednesday morning is devoted to a discussion of the material presented during the week and a presentation of special student exercises. Each student is allowed to choose some spe-

cific governmental unit and develop a suitable and complete plan of public health administration for this unit. In doing this he should coördinate his training in vital statistics, bacteriology, child hygiene, and epidemiology, applying this knowledge in the organization of a theoretical department, making suitable budgets for each division, determining the number of personnel, and outlining the activities of the various bureaus.

Field Studies and Demonstrations: These are arranged for Thursday from October through January and are given in coöperation with the Departments of Epidemiology and of Child Hygiene. The exercises are selected to illustrate the practical application of the data that have been presented in the lectures. Active coöperation has been effected with the Health Department of the City of Boston, the Massachusetts State Department of Public Health, the Connecticut State Department of Health, the Town of Brookline, the City of Newton, and many other official and unofficial health agencies.

A wide variety of special fields in public health administration is available for observation and study by the students, including special activities in large and small city health departments, rural boards of health, departments of school medical inspection, public health nursing, communicable disease control, health units, clinics for the control of tuberculosis and venereal disease, health examinations, contagious disease hospitals, etc.

Public Health Administration B

Field work — Month of May, all day.

A limited number of students will be accepted for this course. Each one is assigned to, and participates in, the activities of an official public health organization affiliated with the School. He will be expected to submit a critical and constructive report upon some aspect of the work in which he is engaged. Saturday mornings will be devoted to a group discussion of the various field activities being studied.

Research in Public Health Administration

Advanced students are offered the opportunity to undertake special studies in Public Health Administration. The student must have completed Public Health Administration A, Epidemiology A, and Vital Statistics A before registering for this work.

DIAGNOSIS

Many men who have had positions as health officers have found it profitable to review the general field of medical diagnosis while in the School. Needs in this regard are apt to vary greatly from man to man, but the subjects most frequently reviewed are pulmonary tuberculosis, and the general problems of children's diseases. Work in these fields, and in others which may be required, can readily be arranged during the month of May and will, if possible, include actual examination of patients on the part of the student.

CHILD HYGIENE

Richard M. Smith, A.B., M.D., S.D., *Assistant Professor of Pediatrics and Child Hygiene.*

Harold C. Stuart, Litt.B., M.D., *Assistant Professor of Pediatrics and Child Hygiene.*

M. Luise Diez, M.D., *Instructor in Child Hygiene.*

Stewart H. Clifford, M.D., *Instructor in Pediatrics and Child Hygiene.*

William T. Green, M.D., *Instructor in Orthopaedic Surgery.*

Arthur B. Hightower, M.D., *Instructor in Child Hygiene and Pediatrics.*

Harold M. Teel, M.D., *Instructor in Obstetrics.*

Abraham S. Small, M.D., *Instructor in Pediatrics and Child Hygiene.*

Bertha S. Burke, M.A., *Assistant in Nutrition.*

Ann H. Stewart, A.B., M.D., *Assistant in School Hygiene.*

Rachel Hardwick, S.B., Ch.B., M.D., *Assistant in Child Hygiene.*

Psyche Cattell, A.M., Ed.D., *Research Fellow in Child Hygiene.*

Mary Shirley, Ph.D., *Research Fellow in Child Hygiene.*

Josephine G. O'Brien, R.N.

Child Health A

Lectures. *Mondays, Wednesdays, and Fridays, 9–10 A.M., first half-year.* Dr. Smith, Dr. Stuart and associates.

Field Work: *All day Thursday October and January, Thursday mornings November and December, in conjunction with Public Health Administration A.*

This course presents in broad outline various subjects which have an important relation to child health. They are grouped under three general divisions.

1. — Growth and Development

The lectures on Growth and Development consider not only normal occurrences, but the requirements for satisfactory progress, and the problems of health appraisal in childhood. An attempt is made in this division to cover the scientific foundations upon which activities in the field of child health should be constructed.

2. — Morbidity and Mortality

Lectures on Morbidity and Mortality focus attention upon the chief conditions requiring preventive effort and the prevalence of various risks and handicaps.

3. — Child Hygiene

This division deals with the methods and channels of applied child health activities, both public and private. Field exercises, as well as lectures, demonstrate activities in child hygiene.

Through the field exercises an opportunity is offered to study at first hand the work of the Division of Child Hygiene of the State Department of Public Health, the Infant and Pre-School Child Welfare Conferences of the Boston City Health Department, and the health program in the schools of the City of Newton. The care and protection of handicapped children is also demonstrated on visits to such institutions as the Florence Crittenton Home, the Home for Little Wanderers, the Wrentham State School, and the State Hospital School at Canton.

During the year 1934–35 special lectures and instruction were given by the following:

Francis P. Denny, M.D.
R. Cannon Eley, M.D.
Miss Abigail A. Eliot
Martha M. Eliot, M.D.
John E. Fish, M.D.
Percy R. Howe, D.D.S.
Mr. Cheney Jones
T. Duckett Jones, M.D.
Foster S. Kellogg, M.D.
John Kuhns, M.D.
Miss Janet Merrill
Florence McKay, M.D.
E. F. MacKay, D.D.
C. Stanley Raymond, M.D.
John Rock, M.D.
Mr. Carl Schraeder
Douglas A. Thom, M.D.
Charles F. Wilinsky, M.D.
Mr. Herbert Parsons
Ann Stewart, M.D.

Child Health B

Clinical and field work. *Month of May, all day, limited to four students.*

The aim of this course is to give practical instruction in the conduct of various health activities. It will include visits to prenatal clinics, infant

and preschool child clinics, habit clinics, and school health activities. In connection with a Growth Study being carried on by the Department students will be assigned in pairs to observe the examination of healthy children in which special emphasis will be given to medical, mental, dental and orthopaedic examinations, nutrition problems, and the influence of the social environment upon the child.

MENTAL HYGIENE

C. Macfie Campbell, A.M., S.B., M.D., *Professor of Psychiatry.*

Mental Hygiene A

Time to be arranged during May. Dr. Campbell and associates.

Students interested in psychiatry as a public health problem are requested to register at the Dean's Office for this course. Should there be a sufficient number of applicants with satisfactory qualifications, a course of general orientation in this field will be arranged.

PHYSIOLOGY

Cecil K. Drinker, S.B., M.D., S.D., *Dean* and *Professor of Physiology.*

Lawrence T. Fairhall, Ph.D., *Assistant Professor of Physiology.*

Louis A. Shaw, A.B., *Assistant Professor of Physiology.*

Madeleine E. Field, Ph.D., *Associate in Physiology.*

E. Preble Motley, *Assistant in Physiology.*

Henry Warren, *Assistant in Physiology.*

Ecology A

Lectures. *Tuesdays, 2–4 P.M. and Fridays, 10.15 A.M. to 12.30 P.M. October and November.* Dr. Drinker and associates.

Ecology is that branch of biological science which deals with the relations of living organisms to their surroundings.

It is the effort of sanitary engineering to provide living and working conditions safe and tolerable for man all over the world and under many different circumstances. The human organism reacts characteristically to many changes in physical environment, to chemical changes in the atmosphere, and to alterations in food supply. In every instance large groups of people are involved and a reasonable knowledge of the principles of public health thus requires realization of the effects of the com-

moner environmental conditions met by man. These are heat, cold, humidity, dryness, alterations in barometric pressure, light, contamination of the atmosphere by smoke, dusts and chemicals, and changes in diet.

The course will consist of lectures, conferences and demonstrations covering the reaction caused by the varieties of human experience.

Research in Physiology

Properly qualified students will be given opportunities to work in the laboratory provided they can spend at least six months of undivided time.

Nutrition A

Lectures. *Tuesdays and Thursdays, 2–4 P.M. during April.* Dr. FAIRHALL and assistants.

In addition to the lectures this course consists of conferences and assigned reading upon the chemistry and physiology of nutrition, particularly from the point of view of large groups of people. It will include discussion of the more vital and practical aspects of metabolism and diet. Especial attention will be directed to modern problems of food production, distribution, utilization and food control.

Nutrition B

Laboratory work. *Two afternoons a week during May.* Dr. FAIRHALL.

This course affords an opportunity for laboratory work to properly qualified students. It consists of a study of the more important practical methods of metabolism; the determination of the caloric value of foodstuffs; the determination of the protein, fat and carbohydrate values of foods; the importance of the ash constituents from the viewpoint of mineral metabolism and the micro-analytical rating of foods with respect to spoilage, contamination and adulteration.

Toxicological Analysis

Conferences and laboratory work, *to be arranged according to individual needs.* Dr. FAIRHALL.

An elective course, offered only to students properly qualified in chemistry, in micro methods of analysis of arsenic, mercury, lead and other poisonous metals, dusts, fumes and gases of importance in industrial hygiene.

PUBLIC HEALTH ENGINEERING

Industrial Hygiene and Public Health Engineering

Philip Drinker, S.B., Ch.E., *Professor of Industrial Hygiene.*

Gordon M. Fair, S.M., *Professor of Sanitary Engineering.*

W. Irving Clark, A.B., M.D., F.A.C.S., *Assistant Professor of the Practice of Industrial Medicine.*

Melville C. Whipple, *Assistant Professor of Sanitary Chemistry.*

Constantin P. Yaglou, A.B., S.B., M.M.E., *Assistant Professor of Industrial Hygiene.*

Theodore F. Hatch, S.M., *Instructor in Industrial Sanitation.*

William F. Wells, S.B., *Instructor in Sanitation.*

Robert M. Thomson, *Assistant in Industrial Hygiene.*

Industrial Hygiene A

Lectures and demonstrations. *Mondays, Wednesdays, and Fridays, 2–4 P.M., February, March, and April.* Professor Drinker and associates.

A course of lectures, demonstrations, clinics, and inspections showing the relation of working conditions to health, with special reference to the cause, prevention and treatment of industrial disabilities.

Sanitary Air Analysis A

Laboratory work. *Monday, Wednesday, and Friday afternoons, February, March, and April.* Mr. Hatch and associates.

This is a laboratory course given in conjunction with Industrial Hygiene A and demonstrating methods employed in studying (*a*) physical properties of the air; (*b*) atmospheric impurities; (*c*) protective devices; (*d*) air-conditioning equipment.

Heating and Ventilating (Engineering 140a)

Lectures. *Monday, Wednesday, and Friday, 9–10 A.M., first half-year, at Pierce Hall, Cambridge.* Professor C. H. Berry.

The theory and practice of heating and ventilating. For engineers.

Air Conditioning (Engineering 140b)

Lectures. *Monday, Wednesday, and Friday, 9–10 A.M., second half-year, at Pierce Hall, Cambridge.* Asst. Professor Yaglou and associates.

The theory and practice of air conditioning. For engineers.

Research in Industrial Hygiene, Heating and Ventilating, and Air Conditioning

A limited number of qualified students will be given an opportunity to do research work on any of the subjects covered in the three courses offered by this Department.

At present four research problems are under study: (1) the control of dust generated in industrial processes, (2) estimation of dust concentrations, (3) atmospheric conditions — temperature, humidity, air motion, and ionization — their measurement, control, and effect on man and animals, (4) air requirements for ventilation.

The Principles of Sanitation A

Lectures and laboratory work. *Mondays, Wednesdays, and Fridays, 9–12 A.M., February, March, and April, at Pierce Hall, Cambridge.* Professor FAIR and associates.

A course of lectures, demonstrations, laboratory work and inspections arranged especially for students in the School of Public Health. The following topics will be studied: (*a*) Water Supply — collection, purification and distribution; (*b*) Sewerage — collection, treatment and disposal; (*c*) Analysis of Water and Sewage — physical, chemical and biological; (*d*) Ventilation — physical properties of clean and impure air and their physiological effects; (*e*) Illumination; (*f*) Housing, City Planning and Zoning; (*g*) Rural Sanitation; (*h*) Biological Control — insects and rodents; (*i*) Food Sanitation — production, preservation, distribution and preparation; (*j*) Milk Sanitation; (*k*) Shellfish Sanitation; (*l*) Garbage and Refuse — collection and disposal; (*m*) Sanitation of Schools, Camps and Bathing Places.

Sanitary Chemistry and Biology (Engineering 410a)

Lectures and laboratory work. *Mondays, Wednesdays, and Fridays, 2–5 P.M., first half-year, at Pierce Hall, Cambridge.* Asst. Professor WHIPPLE.

Laboratory methods employed in the study of sanitary projects; microscopy of water and sewage; physical and chemical methods of sanitary analysis; field work in limnology, stream pollution and plant operation.

Research in Sanitation

There is opportunity for properly qualified students to pursue advanced work in subjects relating to the field of sanitation.

Students interested in the study of Sanitary or Public Health Engineering should consult the pamphlet of the Graduate School of Engineering for a

statement of the opportunities for study and research in the engineering aspects of public health.

VITAL STATISTICS

Edwin B. Wilson, Ph.D., *Professor of Vital Statistics.*

Carl R. Doering, A.B., M.D., S.D., *Assistant Professor of Vital Statistics.*

Vital Statistics A1

Lectures and laboratory work. *Tuesdays and Saturdays, 9–11.15 A.M., first half-year.* Dr. Doering.

This introduction to Vital Statistics will consist of lectures, recitations, and written work designed to familiarize the student with (1) the general facts already well established in demography, (2) the methods of graphical representation, (3) the calculation and use of averages and of measures of variation, and (4) the common types of rates, their adjustment and comparison.

References: G. C. Whipple, *Vital Statistics.*
M. J. Rosenau, *Preventive Medicine,* Chap. XXX, by C. R. Doering.

Vital Statistics A2

Lectures. *Tuesdays, Thursdays, and Saturdays, 11.15 A.M.–12.45 P.M., February, March, and April.* Professor Wilson.

This course deals with the elements of the theory of statistical method with especial emphasis on those types of reasoning which are important for the proper planning and execution of field or laboratory investigations. It includes (1) the basic theory of probability, including errors of sampling, (2) association (Yule) and correlation, (3) arithmetic and geometric trends and, as time permits, various other topics such as life tables, rise and fall of epidemics, and the analysis of variation into component parts.

References: G. C. Whipple, *Vital Statistics.*
G. W. Yule, *Introduction to the Theory of Vital Statistics.*

Vital Statistics B

Professor Wilson or Dr. Doering

A reading course, in either or both half-years, without specific assignment of hours, for students who have a satisfactory knowledge of elementary statistics and wish individual supervision in their study of more advanced parts of the subject.

Vital Statistics C

Professor Wilson or Dr. Doering

A research course, in either or both half-years, for students, whether specializing in Vital Statistics or in any other field of public health or the social disciplines, who desire to make statistical investigations of their own or to coöperate in the general statistical research of the Department.

The Physician and the Community

Lectures. *Saturdays, 11.30 A.M.–12.30 P.M., first half-year.* Dr. Doering.

A presentation of situations and conditions in the community which have a bearing upon public health, with a description of various existing social organizations which are designed to meet these situations and with which the physician and public health officer can collaborate.

STUDENTS 1935–36

Barron, Lester M., A.B.	Derby, Conn.
Bradshaw, Raymond W., A.B., M.D.	Oberlin, Ohio
Brown, Harold W., SC.D., M.D.	Muskegon Heights, Mich.
Cadden, John F., M.D.	Charleston, W. Va.
Collins, Randall D., M.D.	Whitesburg, Ky.
Curtis, Hester B., A.B., M.D.	Point Pleasant, N. J.
DeNosaquo, Norman V., S.B., M.D.	Milwaukee, Wis.
Donald, William J., S.B., M.D.	LaFayette, Ala.
Drummond, Clarence I., S.B., M.D.	Medford, Ore.
Farrall, Byron H., A.B., M.D.	Bedford, Mass.
Gibson, Thomas E., S.B., M.D.	Flint, Mich.
Hemeon, Wesley C. L., M.S.	Boston
Higgins, Robert D., M.D.	Ashland, Ky.
Hutter, Charles G., M.D.	Washington, D.C.
Kask, Mihkel, M.D.	Tartu, Estonia
Leon, Alberto P., M.D.	Mexico City, Mexico
Machiavello, Atilio, A.B., M.D.	Santiago, Chile
Mezincescu, Mircea, SC.D.	Bucarest, Roumania
Miller, Leonard A., A.B., M.D., C.M.	St. John's, Newfoundland
Morgan, Thomas E., A.B., M.D.	Jacksonville, Fla.
Norton, J. W. Roy, A.B., M.D.	Rocky Mount, N. C.
Pandit, Sharyn, D.M.C.W.	Indore, India
Scarlett, William P., S.B., M.D.	Clarendon, Ark.
Shah, Aurang, S.B., M.D.	Jalalabad, Afghanistan
Silbert, Nathan E., M.D.	Mattapan
Smith, Walter M., A.B., M.D.	Little Rock, Ark.
Stam, Oliver G.	East Orange, N. J.
Sulcebe, Hamdi M., M.D.	Elbdsan, Albania
Sylvestre, Joseph E., S.B., M.D., D.P.H.	Levis, Canada
Talbot, Henry P., M.D.	West Hartford, Conn.
Tapley, George O., S.B.	Brookline
Tourangeau, Ferdinand J., A.B., M.D., D.P.H.	Quebec, Canada
Twinam, Claire W., S.B., M.D.	Washington, Iowa
Welch, Oliver W., A.B., M.D.	Talladega, Ala.
Yen, Ching-ch'ing, S.B., M.D.	Soochow, China

DEGREES

On June 20, 1935, Degrees and Certificates were conferred as follows:

Master of Public Health, *cum Laude*

Carl M. Gambill, A.B. (*Berea Coll.*) 1927, M.D. (*Univ. of Louisville*) 1931.

Jacques P. Gray, A.B. (*Grinnell Coll.*) 1922, M.D. (*Johns Hopkins Univ.*) 1928.

Gordon Hastings, S.B. (*Randolph Macon Coll.*) 1925, M.D. (*Medical Coll. of Virginia*) 1926.

Hollis S. Ingraham, A.B. (*Harvard Univ.*) 1930, M.D. (*ibid.*) 1933.

Master of Public Health

Joseph D. Applewhite, M.D. (*Vanderbilt Univ.*) 1913.

John M. Kimmey, S.B. (*Univ. of Alabama*) 1926, M.D. (*Emory Univ.*) 1928.

George M. Leiby, S.B. (*Univ. of North Carolina*) 1929, M.D. (*Vanderbilt Univ.*) 1931.

Abbott B. Mitchell, A.B. (*Indiana Univ.*) 1919, S.B. (*Univ. of Michigan*) 1922, M.D. (*ibid.*) 1923.

Alfred A. Peat, M.B.CH.B. (*Aberdeen Univ.*) 1931.

Thomas T. Ross, S.B. (*Hendrix Coll.*) 1921, M.D. (*Tulane Univ.*) 1928.

Malcolm H. Rourk, S.B. (*Univ. of North Carolina*) 1926, M.D. (*Univ. of Minnesota*) 1929.

George H. Sumner, M.D. (*Tulane Univ.*) 1923.

Certificate in Public Health

Robert W. Ballantyne, A.B. (*Muskingum Coll.*) 1927, M.D. (*Univ. of Pennsylvania*) 1931.

Henry C. M. DeWolfe, M.D.C.M. (*Dalhousie Univ.*) 1924.

Ollie M. Goodloe, S.B. (*Vanderbilt Univ.*) 1927, M.D. (*Univ. of Louisville*) 1932.

Leo M. Morse, S.B. (*Ohio State Univ.*) 1931, M.D. (*ibid.*) 1933.

Wallace L. Poole, S.B. (*Univ. of Georgia*) 1922, M.D. (*ibid.*) 1924.

Hermon Y. Tyler, A.B. (*Yale Univ.*) 1931.

TABULAR VIEW

	OCTOBER	NOVEMBER	DECEMBER	JANUARY
MONDAY	Child Health A 9–10 A.M. **Public Health Administration A** 10.15–11.15 A.M. **Bacteriology A** 2 -5 P.M.	Child Health A 9–10 A.M. **Public Health Administration A** 10.15–11.15 A.M. **Bacteriology A** 2–5 P.M.	Child Health A 9–10 A.M. **Public Health Administration A** 10.15–11.15 A.M. **Bacteriology A** 2–5 P.M.	Child Health A 9–10 A.M. **Public Health Administration A** 10.15–11.15 A.M. **Bacteriology A** 2–5 P.M.
TUESDAY	**Vital Statistics A1 Lecture and Laboratory** 9–11.15 A.M. **Public Health Administration A** 11.30 A.M.–12.30 P.M. **Ecology A** 2–4 P.M.	**Vital Statistics A1 Lecture and Laboratory** 9–11.15 A.M. **Public Health Administration A** 11.30 A.M.–12.30 P.M. **Immunology** 2–3 P.M. **Ecology A** 3–5 P.M.	**Vital Statistics A1 Lecture and Laboratory** 9–11.15 A.M. **Public Health Administration A** 11.30 A.M.–12.30 P.M. **Immunology** 2–3 P.M.	**Vital Statistics A1 Lecture and Laboratory** 9–11.15 A.M. **Public Health Administration A** 11.30 A.M.–12.30 P.M. **Immunology** 2–3 P.M.
WEDNESDAY	Child Health A 9–10 A.M. **Public Health Administration A** 10.15 A.M.–12.30 P.M. **Bacteriology A** 2–5 P.M.	Child Health A 9–10 A.M. **Public Health Administration A** 10.15 A.M.–12.30 P.M. **Bacteriology A** 2–5 P.M.	Child Health A 9–10 A.M. **Public Health Administration A** 10.15 A.M.–12.30 P.M. **Bacteriology A** 2–5 P.M.	Child Health A 9–10 A.M. **Public Health Administration A** 10.15 A.M.–12.30 P.M. **Bacteriology A** 2–5 P.M.
THURSDAY	**Field Work in Child Health, Public Health Administration**	**Field Work in Child Health, Public Health Administration** (Mornings only) **Immunology** 2.30–3.30 P.M.	**Field Work in Child Health, Public Health Administration** (Mornings only) **Immunology** 2.30–3.30 P.M.	**Field Work in Child Health, Public Health Administration**
FRIDAY	Child Health A 9–10 A.M. **Ecology A** 10.15 A.M.–12.30 P.M. **Bacteriology A** 2–5 P.M.	Child Health A 9–10 A.M. **Ecology A** 10.15 A.M.–12.30 P.M. **Bacteriology A** 2–5 P.M.	Child Health A 9–10 A.M. **Bacteriology A** 2–5 P.M.	Child Health A 9–10 A.M. **Bacteriology A** 2–5 P.M.
SATURDAY	**Vital Statistics A1 Lecture and Laboratory** 9–11.15 A.M. Physician and the Community 11.30 A.M.–12.30 P.M.	**Vital Statistics A1 Lecture and Laboratory** 9–11.15 A.M. Physician and the Community 11.30 A.M.–12.30 P.M.	**Vital Statistics A1 Lecture and Laboratory** 9–11.15 A.M. Physician and the Community 11.30 A.M.–12.30 P.M.	**Vital Statistics A1 Lecture and Laboratory** 9–11.15 A.M. Physician and the Community 11.30 A.M.–12.30 P.M.

	FEBRUARY	MARCH	APRIL	MAY
MONDAY	**Sanitation A** 9–12 A.M. **Medical Zoölogy and Tropical Medicine A** 2–5 P.M. Industrial Hygiene A 2–5 P.M.	**Sanitation A** 9–12 A.M. **Medical Zoölogy and Tropical Medicine A** 2–5 P.M. Industrial Hygiene A 2–5 P.M.	**Sanitation A** 9–12 A.M. **Medical Zoölogy and Tropical Medicine A** 2–5 P.M. Industrial Hygiene A 2–5 P.M.	For Elective Courses or Special Work
TUESDAY	**Epidemiology A** 9–10 A.M. Communicable Diseases A 10–11 A.M. Vital Statistics A2 11.15 A.M.–12.45 P.M. **Parasitology A** 2–5 P.M.	**Epidemiology A** 9–10 A.M. Communicable Diseases A 10–11 A.M. Vital Statistics A2 11.15 A.M.–12.45 P.M. **Parasitology A** 2–5 P.M.	**Epidemiology A** 9–11 A.M. Vital Statistics A2 11.15 A.M.–12.45 P.M. **Nutrition A** 2–4 P.M.	For Elective Courses or Special Work
WEDNESDAY	**Sanitation A** 9–12 A.M. **Medical Zoölogy and Tropical Medicine A** 2–5 P.M. Industrial Hygiene A 2–5 P.M.	**Sanitation A** 9–12 A.M. **Medical Zoölogy and Tropical Medicine A** 2–5 P.M. Industrial Hygiene A 2–5 P.M.	**Sanitation A** 9–12 A.M. **Medical Zoölogy and Tropical Medicine A** 2–5 P.M. Industrial Hygiene A 2–5 P.M.	For Elective Courses or Special Work
THURSDAY	**Epidemiology A** 9–10 A.M. Communicable Diseases A 10–11 A.M. Vital Statistics A2 11.15 A.M.–12.45 P.M. **Parasitology A** 2–5 P.M.	**Epidemiology A** 9–10 A.M. Communicable Diseases A 10–11 A.M. Vital Statistics A2 11.15 A.M.–12.45 P.M. **Parasitology A** 2–5 P.M.	**Epidemiology A** 9–11 A.M. Vital Statistics A2 11.15 A.M.–12.45 P.M. **Nutrition A** 2–4 P.M.	For Elective Courses or Special Work
FRIDAY	**Sanitation A** 9–12 A.M. **Medical Zoölogy and Tropical Medicine A** 2–5 P.M. Communicable Diseases A 3–5 P.M. Industrial Hygiene A 2–5 P.M.	**Sanitation A** 9–12 A.M. **Medical Zoölogy and Tropical Medicine A** 2–5 P.M. Communicable Diseases A 3–5 P.M. Industrial Hygiene A 2–5 P.M.	**Sanitation A** 9–12 A.M. **Medical Zoölogy and Tropical Medicine A** 2–5 P.M. Industrial Hygiene A 2–5 P.M.	For Elective Courses or Special Work
SATURDAY	**Epidemiology A** 9–10 A.M. Vital Statistics A2 11.15 A.M.–12.45 P.M.	**Epidemiology A** 9–10 A.M. Vital Statistics A2 11.15 A.M.–12.45 P.M.	**Epidemiology A** 9–11 A.M. Vital Statistics A2 11.15 A.M.–12.45 P.M.	For Elective Courses or Special Work